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(54) Improvements in and Relating to Board Products and Mouldings

(57) A composition for the manufacture of building boards and mouldings, especially boards and mouldings for fire protection, comprising potassium silicate and/or sodium silicate, light weight aggregate and cellulosic fibres. Preferred light weight aggregates are vermiculite and/or pulverised fuel ash cenospheres. The cellulosic fibres may be first dispersed in a solution of potassium silicate and/or sodium silicate before adding the resultant liquid dispersion to the dry ingredients.

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SPECIFICATION

Improvements in and Relating to Board Products and Mouldings

This invention relates to a novel composition for boards and mouldings of the type which in the past have comprised light weight aggregate and potassium silicate or sodium silicate binder. Typical light weight aggregates include vermiculite, perlite, and pulverised fuel ash cenospheres and are usually inorganic.

The usual process for manufacturing this type of board or moulding normally involves the use of potassium or sodium silicate in solution with water, and usually includes the steps of mixing, pressing and stoving.

This type of board or moulding is used for a variety of applications but is especially suitable for fire resistant and high temperature insulation applications. This type of board or moulding does however have the disadvantage of being friable, which results in excessive breakages in handling, transportation and application, and also in the product not being suitable for application methods which involve mechanical means such as drilling, screwing, the use of clips and brackets and so on.

The usual methods of application for these materials have in the past included the use of wet cements or adhesives, and have become much less attractive because of the messy nature of the process, and many skilled applicators of these materials now prefer to avoid the use of wet cements or adhesives and to use instead materials which can be fixed by mechanical means.

According to the present invention a composition is provided for the manufacture of boards and mouldings, comprising potassium silicate and/or sodium silicate, light weight aggregate and cellulosic fibres, which will be more suitable for application by mechanical means. The ingredients are preferably present in the following proportions by dry weight:

	%
Potassium silicate and/or sodium silicate	3—25
Light weight aggregate	55—95
Cellulosic fibres	½—20

The particularly preferred proportions are in the ranges 7—20%, 80—90%, and 2—8% by weight respectively.

The preferred maximum amount of cellulosic fibre when the application is to be a fire resistant one is 5%.

The density of the resultant product made from this composition will ordinarily have a density in the range 300—900 kg/m³.

It is preferable in the mixing operation to first disperse the cellulosic fibres in the potassium and/or sodium silicate solution and then to add this liquid dispersion to the dry ingredients in the mixer.

An example of a preferred composition according to this invention is as follows by dry weight:

	%
Potassium silicate and/or sodium silicate	15
Vermiculite and/or pulverised fuel ash cenospheres	81
Cellulosic fibres	4

The advantage of boards and mouldings made in accordance with this invention lies in their increased toughness and better suitability for application or installation using mechanical methods, such as drilling, screwing, use of clips, brackets and so on, and also in much reduced breakages in handling, transportation and application.

Claims

1. A composition suitable for the manufacture of building boards and mouldings comprising potassium silicate and/or sodium silicate, light weight aggregate and cellulosic fibres.

2. A composition as claimed in Claim 1 in which the light weight aggregate is vermiculite and/or pulverised fuel ash cenospheres.

3. A composition as claimed in Claim 1 in which the ingredients are present in the following percentages by dry weight:—

	%
Potassium silicate and/or sodium silicate	3 to 25
Light weight aggregate	55 to 95
Cellulosic fibres	½ to 20

4. A method of making building boards or moulding from compositions as claimed in any preceding claim, which includes the steps of mixing the ingredients, pressing and stoving or air drying.

5. A method of mixing the moulding compositions as claimed in Claims 1 to 3 which includes the step of first dispersing the cellulosic fibres in a solution of potassium silicate and/or sodium silicate and then adding this liquid dispersion to the dry ingredients.

6. Building boards or mouldings made from compositions as claimed in Claims 1 to 3.

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